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खोपड़ी कर्षण चिमटे — क्रचफील्ड पैटर्न  
( पहला पुनरीक्षण )

**Skull Traction Tongs — Crutchfield's  
Pattern**  
( First Revision )

ICS 11.040.30

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## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Neurosurgery Instruments, Implants and Accessories Sectional Committee had been approval of the Medical Equipment and Hospital Planning Division Council.

This standard was originally published in 1982. This revision aligns the cross references to the latest standards and incorporates the revised designation for stainless steel. After publication of this standard, IS 10174 : 1982 stands withdrawn.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

*Indian Standard***SKULL TRACTION TONGS — CRUTCHFIELD'S PATTERN***( First Revision )***1 SCOPE**

This standard covers dimensional and other requirement for Crutch fields skull traction tongs.

**2 REFERENCES**

The standard given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

<i>IS No.</i>	<i>Title</i>
IS 6603 : 2001	Stainless steel bars and flats — Specification ( <i>first revision</i> )
IS 1501 (Part 1) : 2020/ISO 6507-1 : 2018	Metallic materials — Vickers hardness test: Part 1 Test method ( <i>fifth revision</i> )
IS 7531 : 1990	Methods for testing of corrosion resistance of stainless steel surgical instruments ( <i>first revision</i> )

**3 SHAPE AND DIMENSIONS**

The shape and dimensions shall be as shown in Fig. 1.

**4 MATERIAL**

Various components of the skull traction tongs shall be made from stainless steel of compositions indicated below:

<i>Sl No.</i>	<i>Component</i>	<i>Stainless Steel Conforming to</i>
(1)	(2)	(3)
i)	Tongs and hook piece	Designation X40Cr13 of IS 6603
ii)	Fly nut, lock nut and locking bolt	Designation X30Cr13 of IS 6603
iii)	Hook screw, nut and rivet	Designation X20Cr13 of IS 6603

**5 WORKMANSHIP AND FINISH**

**5.1** The tongs and other components shall be forged in one piece. The tong pins shall be forged separately and fitted rigidly to the tongs in a manner shown in Fig. 1. They shall not be liable to slip off during the traction process and shall provide an effective grip.

**5.2** All the components shall be finished smooth they shall be free from burrs, pits, sharp edges, cracks and other defects. The knurling shall be well defined and neatly formed.

**5.3** The hook and the tongs shall be capable of revolving freely at the joint, there shall be no play between the tongs at the joint.

**5.4** All threaded components shall have neat and well-formed threads. The threads of locking bolt, lock nut and fly nut shall be of free class fit, whereas the screw-joint threads shall have a medium class fit.

**5.5** All components shall be brightly polished and passivated. The tongs shall be treated in 10 percent (v/v) nitric acid solution for not less than minutes at a temperature of not less than 10 °C and not exceeding 60 °C. The tongs shall then be rinsed with water, dried in hot air and joints lubricated with a non-toxic and non-corrosive substance.

**6 HEAT TREATMENT**

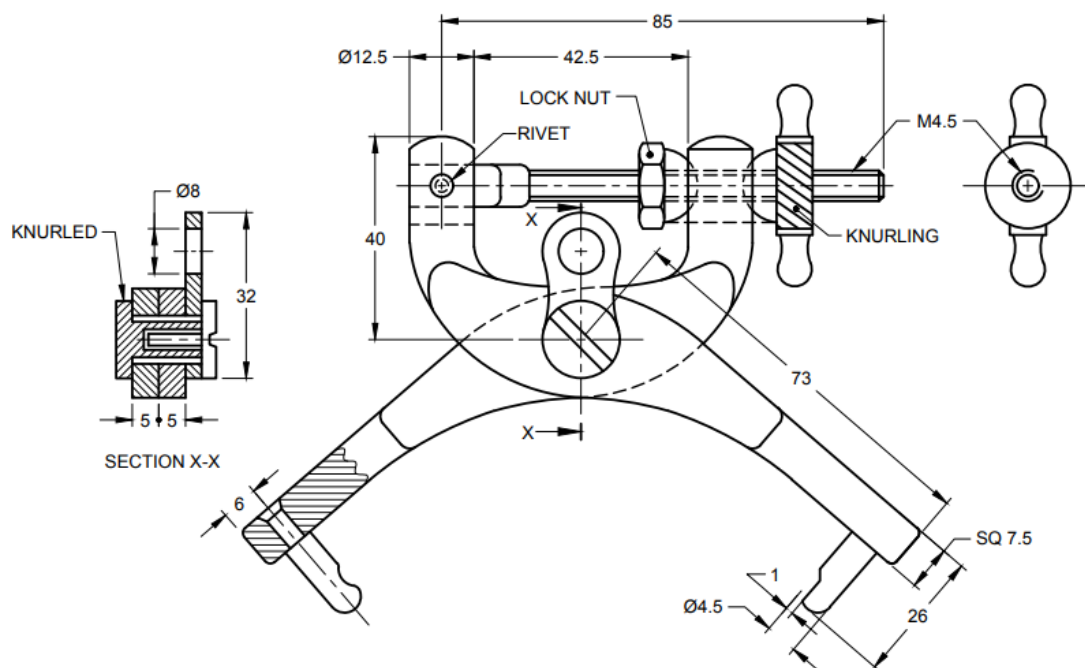
The various components shall be suitably hardened and tempered to give a hardness, when tested in accordance with IS 1501 (Part 1).

**7 TESTS**

**7.1** Take a suitable template having curvature approximately similar to that of a skull, having two holes of 4.5 dia x 3 mm each, at a distance of 90 mm from each other and situated horizontally at the centre. Set the tong-pins in the holes and adjust the tension in the locking bolt with the help of lock nut and fly nut in such a way that the template is firmly gripped by the tong pins. Apply a load of 100 N horizontally at the hook through a pulley. The tong pins shall not slip off due to application of this load.

**7.2 Corrosion Resistance**

The tongs shall show no sign of corrosion or staining, when tested in accordance with IS 7531.



ALL DIMENSIONS IN MILLIMETERS.

FIG. 1 TONGS, SKULL TRACTION, CRUTCHFIELD' S PATTERN

Tolerances on various dimensions shall be permitted as given below:

- $\pm 0.1$  mm for dimensions up to 2.0 mm,
- $\pm 0.2$  mm for dimensions above 2.0 mm and up to 5.0 mm,
- $\pm 0.5$  mm for dimensions above 5.0 mm and up to 10.0 mm,
- $\pm 1.0$  mm for dimensions above 10.0 mm and up to 50.0 mm, and
- $\pm 2.0$  mm for dimensions above 50.0 mm.

## 8 MARKING

**8.1** Each pair of tongs shall be marked with the manufacturer's name, initials or registered trade-mark and the country of manufacture.

### 8.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the

*Bureau of Indian Standards Act, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.*

## 9 PACKING

Each pair of tongs shall be wrapped in a moisture proof paper and packed in a card board carton. Alternatively, packing may be done as agreed to between the purchaser and the supplier.

**ANNEX A***(Foreword)***COMMITTEE COMPOSITION**

Neurosurgery Instruments Implants and Accessories Sectional Committee, MHD 07

<i>Organization</i>	<i>Representative(s)</i>
G B Pant Hospital, New Delhi	PROF DALJIT SINGH ( <b><i>Chairperson</i></b> )
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Boston Scientific India Private Limited, Gurugram	SHRI DEV CHOPRA SHRI PRASHANTH PRABHAKAR ( <i>Alternate</i> )
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Kalam Institute of Health Technology, Vishakhapatnam	DR JITENDAR SHARMA SHRI DILIP KUMAR CHEKURI ( <i>Alternate I</i> ) SUSHMITHA CHOWDARY ( <i>Alternate II</i> )

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Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram	DR GEORGE C. VILANILAM DR KRISHNAKUMAR K. ( <i>Alternate</i> )
Stryker India Private Limited, Gurugram	MR SHIVKUMAR HURDALE
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*Member Secretary*  
MS UROOSA WARSI  
SCIENTIST 'B'/ASSISTANT DIRECTOR  
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This Indian Standard has been developed from Doc No.: MHD 07 (20243).

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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